

**What is Claimed is:**

1. A sintered body with high hardness for use in the cutting of cast iron, which comprises a WC/Co-based superhard substrate, and a high hardness layer of polycrystalline cubic boron nitride (PCBN) formed by sintering cubic boron nitride (CBN) and binder powders on the WC/Co-based superhard substrate, in which the binders are two or more materials selected from the group consisting of titanium, aluminum and nickel, and carbides, nitrides, borides and carbonitrides thereof and a solid solution between two or more of the metal materials, and the content of CBN in the high hardness layer of PCBN is in the range of 80 to 98% by volume.

2. The sintered body of Claim 1, wherein the size of CBN particles contained in the high hardness layer of PCBN is 2-6  $\mu\text{m}$ .

3. The sintered body of Claim 1 or 2, wherein the binders contained in the high hardness layer of PCBN comprises a titanium-based compound, an aluminum-based compound and a nickel-based compound, which are present at 3-20% by volume, 10-30% by volume and 5-20% by volume, respectively, relative to the volume of the binders.

4. The sintered body of Claim 1 or 2, wherein the high hardness layer of PCBN contains cobalt and tungsten compounds diffused from the superhard substrate, at 30-45% by volume and 20-40% by weight, respectively, relative to the volume of the binders.

5. The sintered body of Claim 4, wherein the content of cobalt in the superhard substrate is 10-16% by weight.

6. A method for producing a sintered body with high hardness for use in the cutting of cast iron, which comprises the steps of:  
providing a WC/Co-based superhard substrate, cubic boron nitride (CBN) powders, and binder powders consisting of two or more materials selected from the group consisting of titanium, aluminum and nickel, and carbides, nitrides, borides and

carbonitrides thereof and a solid solution between two or more of the metal materials;  
mixing the binder powders and the CBN powders to make a powder mixture;  
heating the powder mixture to remove impurities; and  
sintering the heated powder mixture on a superhard substrate to form a high  
5 highness layer of polycrystalline cubic boron nitride (PCBN) on the superhard substrate.

7. The method of Claim 6, wherein the sintering step is carried out under a pressure of 5-7 GPa at a temperature of 1300-1600 °C.